

**REMARKS****I. Introduction**

In response to the pending Office Action, Applicants have amended claim 1 to further clarify the subject matter of the present invention and cancelled claim 4, without prejudice. Support for the amendment to claim 1 may be found, for example, on page 11, lines 5-23 of the specification. In addition, claim 3 has been rewritten in independent format. No new matter has been added.

As there is no explanation provided in either the January 26, 2006 Office Action or the July 17, 2006 Office Action to indicate that claim 3 has been rejected over the cited prior art, and that the Examiner has indicated that the rejection of claims 1-4 set forth in the August 11, 2005 Office Action was withdrawn, Applicants respectfully submit that claim 3 is allowable over the cited prior art, an indication of which is respectfully solicited. In a telephone conversation with the Applicants on October 16, 2006, the Examiner has acknowledged that claim 3 has not been rejected. In the event that a future Office Action is issued, the finality of the July 17, 2006 Office Action will be withdrawn.

For the reasons set forth below, Applicants respectfully submit that all pending claims are patentable over the cited prior art references.

**II. The Rejection Of Claims 1, 2, 4 And 5 Under 35 U.S.C. § 103**

Claims 1, 2 and 4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Watanabe et al. (JP 2002-319398). In addition, claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Watanabe in view of Kaneda et al. (USP No. 6,638,662). Applicants respectfully traverse these rejections over the pending claims for at least the following reasons.

With regard to the present invention, claim 1 recites, in-part, a non-aqueous electrolyte rechargeable battery comprising a positive electrode capable of charging and discharging lithium, wherein said positive electrode contains a mixture of a first positive electrode active material and a second positive electrode active material, wherein said second positive electrode active material comprises  $\text{Li}_x\text{Co}_{1-y-z}\text{Mg}_y\text{Al}_z\text{O}_2$  where  $1 \leq x \leq 1.03$ ,  $0.005 \leq y \leq 0.1$  and  $0.001 \leq z < 0.02$ , wherein the content of the second positive electrode active material in the mixture of the first and second positive electrode active materials is 10 wt% or higher and 40 wt% or lower.

Watanabe discloses a mixture of a first positive electrode active material comprising  $\text{Li}_x\text{Co}_y\text{M}_w\text{O}_z$ , in which M is at least one of Al, Cu, Zn, Mg, Ca, Ba and Sr, and wherein  $0.02 \leq w \leq 0.15$ . Also disclosed is a second positive electrode active material comprising  $\text{Li}_a\text{Ni}_b\text{M}'_c\text{O}_d$ , in which M' is at least one of Co, Mn, Cr, Fe, V, or Al, and  $0.02 \leq c \leq 0.5$ . As is evident, the second positive electrode active material of the present invention which comprises  $\text{Li}_x\text{Co}_{1-y-z}\text{Mg}_y\text{Al}_z\text{O}_2$  where,  $0.001 \leq z < 0.02$ , falls outside the scope of both the first and the second positive electrode materials disclosed in Watanabe, because the molar amount of Al, is *less than 0.02, not equal to or greater than 0.02*, as is disclosed in Watanabe.

The Examiner argues that the claim of a molar amount of Al being lower than 0.02, not equal or greater than 0.02 is not patentably distinct because, quoting from *Titanium Metal*, “a *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties”. However, Applicants have previously rebutted this presumption, as demonstrated in Table 1 of the specification, that the claimed ranges *do not* have the same properties. The present invention shows unexpected and significant results from the use of Al in such a range. As is indicated in Tables 1 and 2 found on pages 23-24 of the specification of the

present invention, Examples 1-4 contain Al with a molar ratio of 0.01. Comparative Examples 1, 3, 6, 12 and 13 each contain Al with a molar ratio outside the range cited in the present invention. As is shown in Table 2, the Examples 1-4 show marked improvement in capacity maintenance ratio and capacity recovery ratio over the comparative examples cited above.

The Examiner has alleged that the Examples cited in Table 1 are not fully representative of the present subject matter at issue because the first electrode material is an unspecified lithiated complex oxide. The Examiner is mistaken. Claim 1 recites that “said first positive electrode active material comprises lithium oxide containing manganese, said lithium oxide further contains aluminum and/or magnesium.” Accordingly, the first positive electrode active material has been specified as one containing lithium, manganese and aluminum and/or magnesium. The Examples cited in Table 1 of the specification show materials that contain these components.

In addition, the Examiner states that the second electrode material does not circumscribe the specific electrode materials of Examples 1-4. Again the Examiner is mistaken. Claim 1 recites, “said second positive electrode active material comprises  $\text{Li}_x\text{Co}_{1-y-z}\text{Mg}_y\text{Al}_z\text{O}_2$  where  $1 \leq x \leq 1.03$ ,  $0.005 \leq y \leq 0.1$  and  $0.001 \leq z < 0.02$ ”. Examples 1-4 of Table 1 clearly show that the second electrode active material is within the ranges recited in claim 1. Specifically, the second positive electrode active materials are  $\text{LiCo}_{0.94}\text{Mg}_{0.05}\text{Al}_{0.01}\text{O}_2$ . As Table 1 shows, this material is within the ranges recited in claim 1.

Furthermore, the Examiner states that Examples 1-4 do not set out specific weight ratios for the first and second electrodes. However, amended claim 1 recites the limitation, “the content of the second positive electrode active material in the mixture of the first and second

positive electrode active materials is 10 wt% or higher and 40 wt% or lower”. As the wt % of the first electrode active material in each of the Examples 1-4 in Table 1 is 10 wt% of the total mixture, the ratio is within the ranged claimed in amended claim 1. Moreover, Applicants submit that the examples in Table 1 are commensurate in scope with the range cited in amended claim 1 as is described on page 11, lines 13-18, “with a view to making full use of the features of the first positive electrode active material so as to obtain a positive electrode with excellent cycle characteristics and heat resistance in an overcharge state, the content of the second positive electrode active material is preferably 40 wt% or lower.” As the Examples 1-4 of Table 1 are at the lower end of the range cited in amended claim 1, Applicants respectfully submit that the examples are commensurate in scope with claim 1.

Applicants direct the Examiner to MPEP § 716.02(d) entitled “Unexpected Results Commensurate in Scope With Claimed Invention” which states:

To establish unexpected results over a claimed range, applicants should compare *a sufficient number of tests* both inside and outside the claimed range to show the criticality of the claimed range. *In re Hill*, 284 F.2d 955, 128 USPQ 197 (CCPA 1960).

This is the standard under which the unobviousness must be shown. Applicants assert that the examples shown in Tables 1 and 2 are indeed commensurate in scope with the claims which the evidence is offered to support. The range of a molar ratio of 0.001 to less than 0.02 is a small range, *significantly* smaller than the range cited in the prior art (less than or equal to 0.02 to less than or equal to 0.15). Furthermore, the Examples cited in Watanabe contain molar ratios of Al of 0.1 and 0.15 (see Table 2, page 13 of machine copy of Watanabe translation). As such, the difference in molar amounts indicated in the examples of Watanabe are *several times larger*

that the amount of the *entire range* for Al cited in claim 1 of the present invention. Moreover, the present invention cites 4 examples indicating the unexpected and significant results obtained for a battery with an amount of Al within the range cited in claim 1. As such, the present invention does provide objective evidence of non-obviousness that is *commensurate in scope* with the claims which the evidence is offered to support and compares *a sufficient number of tests* both inside and outside the claimed range. To require anything more is unfair, unreasonable and unsupported by the patent law.

As the ranges of the elements disclosed in claim 1 are outside the scope of the prior art, AND the invention discloses unexpected and superior results over the cited prior art, AND that the Examples cited in the specification are commensurate in scope with amended claim 1, Applicants respectfully assert that the § 103 rejection of claim 1 is improper. Therefore, as Watanabe fails to render claim 1 of the present invention obvious, the rejection under § 103(a) should be withdrawn. Accordingly, claim 1 and all pending dependent claims thereon should be considered allowable.

### **III. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable**

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claim 1 is patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

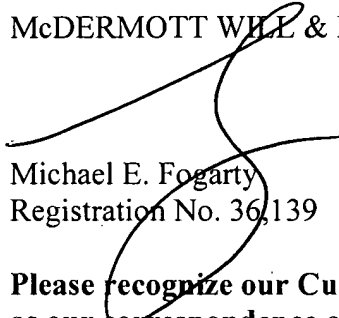
**IV. Conclusion**

Having responded to all open issues set forth in the Office Action, it is respectfully submitted that all claims are in condition for allowance.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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